VMware SD-WAN
Edge platform specifications
November 2023

VMware SD-WAN™, a fundamental component of VMware SASE™ (Secure - Access Service Edge), offers converged cloud networking and security services to achieve flexibility, agility, and scale for enterprises of all sizes. VMware SD-WAN is built on software-defined networking principles to address end-to-end automation, application continuity, branch transformation, and security from the edge to the data center and the cloud.

VMware SD-WAN and VMware SASE are emerging as a platform for enterprises to bring networking and edge compute together for modern applications, while delivering security and ubiquity of access for the distributed workforce. Only VMware delivers SD-WAN and SASE as a cloud-native, edge services architecture for today's distributed enterprises embracing cloud, workforce, and application transformation.

As a cloud-delivered solution, VMware SD-WAN ensures resilient WAN connectivity and allows users to have flexible WAN choices, such as broadband, MPLS, and LTE. VMware SD-WAN offers high application performance and availability while lowering networking costs. It can detect the slightest degradations and dynamically remediate over one or multiple WAN links, resulting in a highly satisfied user experience. While most enterprises deploy SD-WAN hardware appliances at their branch locations, a software-based remote client is also available as an extension of VMware SD-WAN. Moreover, Enhanced Firewall Service, based on VMware's proven NSX security technology, is built into VMware SD-WAN Edges, providing comprehensive security and eliminating the need for legacy firewalls at branch locations.

VMware SD-WAN components

The VMware SD-WAN solution consists of four components:

VMware SD-WAN Edge

VMware SD-WAN Edge is an enterprise-class appliance providing secure and optimized connectivity to applications anywhere, on and off the cloud. It is zero-touch provisioned for secure and optimized connectivity to applications.

VMware SD-WAN Edge is available in various form factors: hardware, software (VMs), downloadable from cloud marketplaces, or Virtual Network Functions (VNF), with hardware appliances most widely deployed at customer branch sites.

AT A GLANCE

VMware SASE, with VMware SD-WAN as a fundamental building block, brings cloud-delivered networking, security, AIOps, and compute to support ubiquitous access for branch and remote workers as well as digital transformation at the edge.

VMware SD-WAN enables enterprises to securely support application growth, network agility, and simplified branch implementations while delivering high-performance, reliable branch access to cloud services, private data centers, SaaS-based and edge-native enterprise applications. Cloud-native by design, VMware SD-WAN and other SASE services are delivered via a global network of VMware Edge PoPs™, either self-managed or as a managed service.

KEY BENEFITS

- **Simplified WAN management:**
  Zero touch deployments, simplified operations, one-click service insertion

- **Assured application performance:**
  Transport-independent performance for the most demanding applications, leveraging economical bandwidth

- **Managed on-ramp to the cloud:**
  Direct cloud access with performance, reliability, and security

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VMware SD-WAN Edge automatically aggregates multiple links and steers traffic over the optimal links based on Dynamic Multipath Optimization™ (DMPO) and deep application recognition (DAR). VMware SD-WAN Edge supports high availability (HA) deployment models and can easily integrate into an existing network.

VMware SD-WAN Edge also offers an Enhanced Firewall Service, significantly strengthening corporate network security, protecting sensitive data, and preventing cyber-attacks. This integrated firewall provides a barrier between a private network and the public Internet and is crucial to protect branch sites from unauthorized access and threats.

VMware SD-WAN Gateways

VMware SD-WAN Gateways optimize data paths to all applications, branches, and data centers, along with the ability to deliver network services to and from the cloud. VMware's distributed, global network of gateways, hosted by VMware/service providers or deployed on-premises, provides scalability, redundancy, and on-demand flexibility.

VMware SD-WAN Gateways implement DMPO, cloud VPN, and VMware SD-WAN Multisource Inbound Quality of Service between global cloud services (SaaS or IaaS) and each VMware SD-WAN Edge, enabling broadband and private leased lines to appear as a single, high-performance WAN connection.

VMware Edge Cloud Orchestrator™

VMware Edge Cloud Orchestrator is a cloud-hosted (or on-premises) central management tool for all VMware SASE components: VMware SD-WAN, VMware Secure Access™, VMware Cloud Web Security™, and VMware Edge Intelligence™ (formerly VMware Edge Network Intelligence). Its web-based user interface (UI) provides simplified configuration, provisioning, monitoring, fault management, logging, and reporting functions. VMware Edge Cloud Orchestrator enables flexible implementation of business-based policies for application delivery and traffic management.
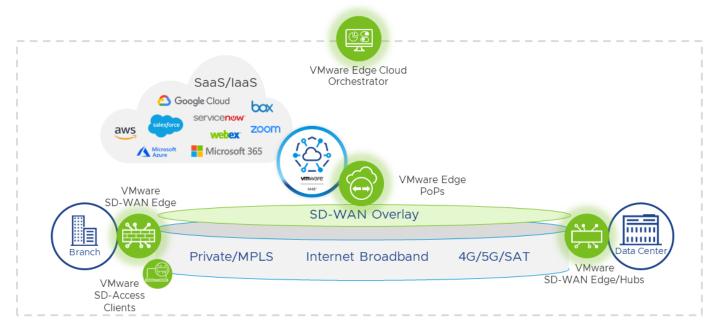

Figure 1: VMware SD-WAN components

VMware Edge Intelligence

VMware Edge Intelligence is a vendor-agnostic artificial intelligence for IT operations (AIOps) solution focused on the enterprise edge that ensures end user and internet of things (IoT) client performance, security, and self-healing through wired and wireless LAN, SD-WAN and SASE.

The solution employs machine learning algorithms and modern big data analytics to process high volumes of data from a wide range of network, device, and application sources. In doing so, VMware Edge Intelligence auto-discovers end user and IoT

devices, automatically establishes baselines, understands every single client interaction, and monitors for deviations to provide actionable insights that operations teams can proactively remediate. See the VMware Edge Intelligence *datasheet* for more information.

Software features

Category	Features
AAA	RADIUS, local authentication and authorization, multitenant 3 Tier RBAC architecture, auditing, roles and privileges
Availability	High availability* for VMware SD-WAN Edge, disaster recovery for VMware Edge Cloud Orchestrator, multilink for high availability of WAN Edge clustering
Configuration and monitoring	REST API, SDK (Java and Python), Syslog, SNMP, NetFlow, 3000+ applications/categories, ANPM, application usage, device identification, live mode, zero IT touch activation, per-flow visibility
Deployment flexibility	Eliminate pre-stage, no CLI, group policies, consolidated ICOM and end customer dashboard, VNFform-factor, multitenant stateless headend, transport group for business policy abstraction, application-aware service insertion on premises or in cloud, RMA workflow, customized application maps
Dynamic Multipath Optimization	Application and network condition aware sub-second steering, jitter/loss correction, fast intelligent routing, intelligent gateway selection, link aggregation, TCP flow optimization, uni-directional link measurements, bandwidth detection
Multitenancy	VMware SD-WAN Controller, VMware SD-WAN Gateway, VMware Edge Cloud Orchestrator
Network services	IPv4, IPv6, DNS, DHCP client, DHCP server, DHCP relay, NAT
QoS	Shaping, policing, per-flow queueing, tunnel shaper, multi-source inbound QoS, rate-limiter, COS aware, outer/inner DSCP tagging, smart defaults, MPLS COS
Remote troubleshooting	Live mode, alerts, events, remote diagnostics (examples: DNS test, ping test, flush active flows, list active flows, paths, VPN tests, packet capture, etc.), PKI infrastructure with certificate management workflows, diagnostic bundles
Routing	OSPF, BGP, static, connected, ICMP probes/responders, overlay flow control, per-packet application aware steering, route filter, route redistribution
SaaS/IaaS	Improved performance for cloud apps, supports well-known IaaS (e.g., AWS, Azure, GCP), Cloud Web Security (e.g., Check Point, Zscaler, Palo Alto Networks, Netskope, Menlo Security, Websense, OpenDNS)
Cloud providers	AWS, Azure, GCP, Alibaba, VMware Cloud on AWS, Azure VMware Solution. Performance data is available upon request.
Security	AES256/128, SHA1/SHA2, IKEv2, VPNC compliant IPsec, PKI, segmentation, TLS1.2, SCEP, firewall L2-7, 1:1 NAT, port forwarding, dynamic branch to branch, MAC filtering Security service Insertion capabilities include simplified service insertion of third-party NGFW running locally on Edge VNF, and simplified cloud-based NGFW, AV, IPS/IDS, threat-detection service insertion Protects users and infrastructure accessing SaaS and Internet apps from threats, at the same time providing visibility and control with VMware Cloud Web Security
Port security	Wi-Fi 802.1x – WPA-Enterprise (EAP-MD5, EAP-TLS), WPA-Personal 802.1x- Enterprise (EAP-MD5, EAP-TLS) - MAC address-based access (local) 802.1x is supported on both switched and routed ports MAC Address Bypass (MAB): For LAN devices that do not support 802.1x authentication, their MAC addresses can be checked against a RADIUS server
Enhanced Firewall Service	Advanced firewall features including Intrusion Detection and Prevention (IDS/IPS), hosted firewall logging, security monitoring, and other upcoming firewall features
Hosted firewall logging	VMware SASE provides customers a hosted logging infrastructure on the Cloud to capture and store firewall logs received from Edges.

Category	Features
Security monitoring dashboard	The new "Security Overview" screen displays real-time security related statistics such as Threats Detected/Prevented, Edge Impacted/Protected, and more. To access it, use the VMware Edge Cloud Orchestrator UI > Monitor > Security Overview.
VLAN tagging	802.1Q, 802.1ad, QinQ (0x8100), QinQ (0x9100), native
WAN overlay support	Public/private/hybrid transport, cloud and on-premises

* High Availability interface (GE1) is ~800 Mbps for 510, 610, and 620 models. Starting in release 5.2, any interface (including the 10G interface) can be used for HA.

Software subscriptions editions

VMware SD-WAN software is based on different subscription editions with different features designed for a wide variety of use cases. They are listed below.

Features	Standard Edition	Enterprise Edition	Premium Edition
VMware Edge Cloud Orchestrator	✓	✓	✓
Dynamic Multipath Optimization (DMPO)	✓	✓	✓
Number of Edges supported	Unlimited	Unlimited	Unlimited
Maximum number of data segments	4	128	128
Maximum number of profiles	4	Unlimited	Unlimited
Partner gateway support	✓	✓	✓
Virtual services orchestration for NGFW deployment on Edges	✓	✓	✓
Routing support	BGP, OSPF	BGP, OSPF, Multicast	BGP, OSPF, Multicast
Cloud gateway to SaaS and cloud security service (without tunneling)	X	X	✓
Cloud gateway to legacy DCs, IaaS, or cloud security service viatunnels (non-SD-WAN destinations)	add-on	add-on	✓
Enhanced Firewall Service (incl. IDS/IPS)	add-on	add-on	add-on
Hosted firewall logging	✓	✓	✓
Security monitoring dashboard	✓	✓	✓
Direct Edge to Internet/cloud security service (BGP over IPsec)	✓	✓	✓
Automated tunnel setup via API to IaaS or third-party cloud security service	X	from Edge	from Edge or Gateway
PCI certified service	add-on	add-on	add-on
Upgradeable to a higher edition	✓	✓	N/A
Hub clustering	✓	✓	✓
Gateways as cloud VPN hub	X	X	✓
Auto VPN setup	Hub to spoke	Hub to spoke plus dynamic B2B	Hub to spoke plus dynamic B2B

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VMware SD-WAN Edge Platform Specifications

Features	Standard Edition	Enterprise Edition	Premium Edition
Customizable business & security policy	✓	✓	✓
Path visibility	Last-mile	Last-mile plus site-to-site	Last-mile plus site-to-site
Wired/wireless/LAN/WAN analytics with VMware Edge Intelligence	add-on	Includes 1 node, additional nodes available as add-on	Includes 2 nodes, additional nodes available as add-on
VMware Edge Intelligence IoT Operational Assurance	add-on	add-on	add-on
PKI certificate management	Embedded certificate of authority (CA)	Embedded CA plus intermediate and external CA	Embedded CA plus intermediate and external CA
Mixed editions	✓	✓	✓

VMware SD-WAN is licensed by bandwidth tier as shown in the table below.

Edge / BW	10 M	30 M	50 M	100 M	200 M	350 M	500 M	750 M	1 G	2 G	5 G	10 G	15 G
Edge 510, 510N, 510LTE	•	•	•	•	•	•	•	•					
Edge 520, 520V	•	•	•	•	•	•	•	•					
Edge 540				•	•	•	•	•	•				
Edge 610, 610C, 610N, 610LTE	•	•	•	•	•	•	•	•					
Edge 620, 620C, 620N	•	•	•	•	•	•	•	•	•				
Edge 640, 640C, 640N				•	•	•	•	•	•	•	•		
Edge 680, 680C, 680N				•	•	•	•	•	•	•	•		
Edge 840				•	•	•	•	•	•	•	•		
Edge 2000							•	•	•	•	•	•	•
Edge 3400, 3400C					•	•	•	•	•	•	•	•	

Edge / BW	10 M	30 M	50 M	100 M	200 M	350 M	500 M	750 M	1 G	2 G	5 G	10 G	15 G
Edge 3800, 3800C								•	•	•	•	•	•
Edge 3810								•	•	•	•	•	•

Refer to the Product Lifecycle Updates for a complete list of end-of-sale Edge models.

Software support levels

Software Support Plans	Basic	Production	Premier
Call center	24x7 (Sev1) 12x5 (Sev2, Sev3, Sev4)	24x7 (Sev1) 12x5 (Sev2, Sev3, Sev4)	24x7 (Sev1, Sev2) 12x5 (Sev3, Sev4)
Response time	Sev1: within 1 hour Sev2: within 6 hours Sev3: within 12 hours Sev4: not applicable	Sev1: within 30 mins Sev2: within 4 hours Sev3: within 8 hours Sev4: within 24 hours	Sev1: within 30 mins Sev2: within 2 hours Sev3: within 4 hours Sev4: within 12 hours Sev5: per schedule
Software maintenance	Yes	Yes	Yes
Federal support	-	Yes	Yes

Hardware replacement services

VMware includes hardware replacement services with each purchase or rental of a VMware SD-WAN Edge device. For more information, refer to the *Hardware Replacement Services* datasheet.

Physical Edge models

VMware SD-WAN Edge appliance models available for sale include the 510, 6x0, and 3xx0 series. Flexible deployment options are available, including models with or without integrated Wi-Fi and models certified for sale in China.

• VMware SD-WAN Edges (with integrated Wi-Fi): Please refer to the Physical Edge Specifications table below.

• VMware SD-WAN Edges (without integrated Wi-Fi): These Edges have identical specifications to the integrated Wi-Fi models except they do not have Wi-Fi built in. Please refer to the Physical Edge Specifications table below. These models are denoted by the "N" suffix in the model's name.

• VMware SD-WAN Edges with China certifications: These Edges have identical specifications to their "non-China" counterparts but include China-specific regulatory certifications and the China version of the TPM module. These are denoted by the "C" suffix in the model's name.

Physical Edge specifications (performance and scale)

Edge	510, 510N	510-LTE	520*	520V*	540*	610, 610C, 610N	610-LTE
Max throughput per Edge with routed-mode ports (1300-byte)	800 Mbps	800 Mbps	850 Mbps	850 Mbps	1.5 Gbps	800 Mbps	800 Mbps
Max throughput per Edge with routed-mode ports (IMIX)	275 Mbps	275 Mbps	275 Mbps	275 Mbps	600 Mbps	275 Mbps	275 Mbps
Max throughput per Edge with IPS and Stateful Firewall enabled (IMIX) [3]	140 Mbps	140 Mbps	140 Mbps	140 Mbps	350 Mbps	175 Mbps	175 Mbps
Max throughput per Edge with VMware Edge Intelligence enabled (IMIX)[4]	200 Mbps	200 Mbps	200 Mbps	200 Mbps	500 Mbps	200 Mbps	200 Mbps
Max throughput per Edge with VMware Edge Intelligence, IPS and Stateful Firewall enabled (IMIX)	140 Mbps	140 Mbps	140 Mbps	140 Mbps	300 Mbps	150 Mbps	150 Mbps
Max tunnel scale	50	50	50	50	100	50	50
Flow per second	2,400	2,400	2,400	2,400	4,800	2,400	2,400
Flow per second with VMware Edge Intelligence enabled	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Max concurrent flows	225K	225K	225K	225K	225K	225K	225K
Max concurrent flows with IPS and Stateful Firewall enabled	110K	110K	110K	110K	110K	110K	110K
Max concurrent flows with VMware Edge Intelligence enabled	110K	110K	110K	110K	110K	110K	110K
Max concurrent flows with VMware Edge Intelligence, IPS and Stateful Firewall enabled	110K	110K	110K	110K	110K	110K	110K
Max number of routes	100K	100K	100K	100K	100K	100K	100K
Max segments	32	32	32	32	32	32	32
Maximum NAT entries	225K	225K	225K	225K	225K	225K	225K

Edge	620, 620C, 620N	640*, 640C, 640N	680*, 680C, 680N	840*	2000*	3400, 3400C	3800, 3800C	3810
Max throughput per Edge with routed-mode ports (1300-byte) [1]	1.5 Gbps	5 Gbps	8Gbps	6 Gbps	15 Gbps	10 Gbps	15 Gbps	15 Gbps
Max throughput per Edge with routed-mode ports (IMIX)[2]	900 Mbps	2 Gbps	3 Gbps	2.0 Gbps	6 Gbps	3.5 Gbps	6.4 Gbps	6.4 Gbps
Max throughput per Edge with IPS and Stateful Firewall enabled (IMIX) [3]	500 Mbps	700 Mbps	1.5 Gbps	1.0 Gbps	3.5 Gbps	2.5 Gbps	4.0 Gbps	4.0 Gbps
Max throughput per Edge with Edge Intelligence enabled (IMIX)[4]	700 Mbps	1.0 Gbps	2.0 Gbps	1.5 Gbps	5.0 Gbps	3.0 Gbps	5.0 Gbps	5.0 Gbps
Max throughput per Edge with VMware Edge Intelligence, IPS and Stateful Firewall enabled (IMIX)	450 Mbps	600 Mbps	1.5 Gbps	800 Mbps	3.5 Gbps	2.5 Gbps	4.0 Gbps	4.0 Gbps
Max tunnel scale	100	400	800	400	6,000	4,000	6,000	6,000

Flow per second	4,800	19,200	19,200	19,200	50,000	38,400	50,000	50,000
Flow per second with VMware Edge Intelligence enabled	2,400	9,600	9,600	9,600	25,000	19,200	25,000	25,000
Max concurrent flows	460K	960K	1.9M	960K	3.8M	1.9M	3.8M	3.8M
Max concurrent flows with IPS and Stateful Firewall enabled	230K	460K	960K	460K	1.9M	960K	1.9M	1.9M
Max concurrent flows with VMware Edge Intelligence enabled	230K	460K	960K	460K	1.9M	960K	1.9M	1.9M
Max concurrent flows with VMware Edge Intelligence, IPS and Stateful Firewall enabled	230K	460K	960K	460K	960K	960K	960K	960K
Max number of routes	100K	100K	100K	100K	100K	100K	100K	100K
Max segments	128	128	128	128	128	128	128	128
Maximum NAT entries	460K	960K	960K	960K	1.9M	960K	1.9M	1.9M

* Edge marked with an asterisk has reached end-of-sale. VMware recommends customers use 640N and 680N (non-Wi-Fi models) to replace 640 and 680 (Wi-Fi models).
1. Maximum performance of the Edge based on large packet (1300-byte) payload with AES-128 encryption and DPI turned on
2. Internet traffic (IMIX) performance based on average packet size of 417-byte payload with AES-128 encryption and DPI turned on
Note: VMware SD-WAN Edges also support clustering deployments for multi-gigabit performance.
3. Performance numbers with IPS and Stateful Firewall measured using TREX setup based on 400-byte payload.
4. Performance numbers with VMware Edge Intelligence are measured using a 400-byte payload.

Enhanced HA link performance

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N	610-LTE	620, 620C, 620N
Max throughput (IMIX) across EHA Link	220 Mbps	220 Mbps	220 Mbps	220 Mbps	480 Mbps	220 Mbps	220 Mbps	700 Mbps

Edge	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
Max throughput (IMIX) across EHA Link	1 Gbps	2 Gbps	1 Gbps	4 Gbps	2.5 Gbps	5 Gbps	5 Gbps

Maximum Edge throughput with firewall service chained

Edge	620, 620C, 620N	640, 640C, 640N	680, 680C, 680N	840	3400, 3400C	3800, 3800C	3810
Max throughput (IMIX) with Firewall VNF chained	300 Mbps	600 Mbps	1 Gbps	1 Gbps	2 Gbps	3 Gbps	3 Gbps

Connectivity

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N	610-LTE	620, 620C, 620N
LAN / WAN 1G RJ-45	4	4	2	2	2	6	6	6
LAN / WAN 1G SFP			2	2	2	2	2	2[1]
L2 Switching Only RJ-45			8	8	8			
Integrated Wi-Fi	Yes (except 510N)	Yes	Yes	Yes	Yes	Yes (except 610N)	Yes	Yes (except 620N)
Integrated LTE		Yes[2]					Yes[2]	
USB ports (3G/4G LTE)	2[4]	2[4]	2[3] + 2[4]	2[3] + 2[4]	2[3] + 2[4]	2[3]	2[3]	2[3]

Edge	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
LAN / WAN 1G RJ-45	6	6	6	6	6	6	6
LAN / WAN 1G/10G SFP+	2	2	2	2	4	4	8
Integrated Wi-Fi	Yes (except 640N)	Yes (except 680N)	No	No	No	No	No
USB ports (3G/4G LTE)	2[3]	2[3]	2[4]	2[3] + 2[4]	2[3]	2[3]	2[3]

1. 620, 620C, and 620N support SFP+ 1/10GE modules
2. 510-LTE supports additional 2 LTE interfaces through USB for 3 concurrent active interfaces
3. USB 3.0 ports
4. USB 2.0 ports

Memory, storage, and third-party VNFs

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N	610-LTE	620, 620C, 620N
System memory (RAM)	4 GB	4 GB	4 GB	8 GB	8 GB	4 GB	4 GB	8 GB
System flash	8 GB	8 GB	8 GB	8 GB	8 GB	16 GB	16 GB	16 GB
System storage				64 GB (SSD)				120 GB (SSD)
VNF capable (initial release)	No	No	No	Yes (3.2.0)	No	No	No	Yes (3.4.3)

Edge	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
System memory (RAM)	32 GB	32 GB	32 GB	32 GB	32 GB	32 GB	32 GB
System flash	16 GB	16 GB	n/a	n/a	n/a	n/a	n/a
System storage	120 GB (SSD)	120 GB (SSD)	100 GB (SSD)	100 GB (SSD)	256 GB (SSD)	256 GB (SSD)	256 GB (SSD)
VNF capable (initial release)	Yes (3.4.3)	Yes (3.4.3)	Yes (3.2.0)	No	Yes (4.3.0)	Yes (4.3.0)	Yes (4.3.0)

Dimension, power, environment, and reliability

Edge	510, 510N	510-LTE	520	520V	540	610, 610C, 610N, 610-LTE	620, 620C, 620N
Cooling	Fan-less	Fan-less	Fan-less	With fan	With fan	Fan-less	With fan
Mounting	Desktop / Wall-mount / 19-inch rackmount						
Size (W x D x H) in mm	206 x 180 x 39.7 mm		206 x 180 x 51 mm			206 x 200 x 52 mm	
Unit Weight	2.0 lbs.		2.6 lbs.			2.9 lbs.	3.1 lbs.
Gross Weight[1]	5 lbs.		6 lbs.			6 lbs.	
Power Supply	External: AC						
AC input	Voltage: 100 V to 240 V auto-ranging, Frequency: 50 Hz to 60 Hz						
Power Load (Typical / Max)	15W / 40W	15W / 40W	25W/45W	30W/45W	30W/50W	16W/26W	20W/30W
Operating conditions	Temperature (0 ˚C to 40 ˚C), Humidity (5% to 85%), Altitude (5,000 m)						
Non-operating conditions	Temperature (-40 ˚C to 70 ˚C), Humidity (5% to 95%), Altitude (5,000 m)						
MTBF (25 ˚C ambient temperature)[2]	40.6 yrs.	40.6 yrs.	22.9 yrs.	22.8 yrs.	22.8 yrs.	22.8 yrs.	

Edge	640, 640C, 640N	680, 680C, 680N	840	2000	3400, 3400C	3800, 3800C	3810
Cooling	With fan						
Mounting	Desktop/Wall-mount/RMK		1RU Rack Mounts				
Size (W x D x H) in mm	206 x 200 x 52		437 x 249 x 43	437 x 650 x 43	434 x 381 x 44		
Unit Weight	3.3 lbs.		12 lbs.	23.5 lbs.	13.8 lbs.	15.7 lbs.	
Gross Weight[1]	6.0 lbs.		16 lbs.	30 lbs.	25 lbs.		
Power supply	External: AC		Internal: AC				
Redundant power supply	No	No	No	Yes (1+1)	Yes (1+1)		
AC input	Voltage: 100 V to 240 V auto-ranging, Frequency: 50 Hz to 60 Hz						
Power load (Typical / Max)	35W / 120W	40W / 120W	40W/70W	150W/200W	165W/400W	200W/400W	
Operating temperature	10 ˚C to 40 ˚C		10 ˚C to 40 ˚C	10 ˚C to 35 ˚C	0 ˚C to 45 ˚C		
Operating humidity	5% to 85%		5% to 85%	5% to 85%	5% to 85%		
Operating altitude	5,000 m		5,000 m	5,000 m	3,048 m		
Non-operating conditions	40 ˚C to 70 ˚C		-40 ˚C to 70 ˚C	-40 ˚C to 70 ˚C	-40 ˚C to 70 ˚C		
Non-operating humidity	5% to 95%		5% to 95%	5% to 95%	5% to 95%		
Non-operating altitude	5,000 m		5,000 m	5,000 m	10,688 m		
MTBF (25 ˚C ambient temperature)[2]	22.8 years		11.5 years	7.0 years	17.1 years		

1. Gross weight is total weight of shipment package including unit, power adaptor, AC cord, wall mount brackets, packaging
2. MTBF based on Telcordia SR-332 methodology; excludes system fans in the calculation

Hardware accessories

Mounting brackets and rails

Edge Model	Included in box	Additional Options	Part Number
520, 520v, 540		2RU rack mount shelf	VC-EDG-RMB-P
510/510-LTE, 6x0	Wall mount bracket	2RU rack mount shelf	VC-EDG-RMB-P
840	Bracket rack mounts		
2000	4-post rail kit		
3x00	2-post rail kit	4-post rail kit	Dell P/N: 770-BCGP

Hardware accessories

Edge	Power Adapter* + Cable	Ethernet Cable	Quick Start Guide
Edge 510, 510N	•	•	•
Edge 510-LTE	•	•	•
Edge 520, 520V	•	•	•
Edge 540	•	•	•
Edge 610, 610C, 610N	•		•
Edge 610-LTE	•		•
Edge 620, 620C, 620N	•	•	•
Edge 640, 640C, 640N	•	•	•
Edge 680, 680C, 680N	•	•	•
Edge 840	Integrated power adapter + 1 cable		•
Edge 2000	Hot swappable 1+1 integrated power adaptor + 2x cables		•
Edge 3400, 3400C	Hot swappable 1+1 integrated power adaptor + 2x cables		•
Edge 3800, 3800C	Hot swappable 1+1 integrated power adaptor + 2x cables		•
Edge 3810	Hot swappable 1+1 integrated power adaptor + 2x cables		•

* Every edge comes with PSU, separate or integrated.

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Wireless specifications

Wireless LAN (Wi-Fi) specifications

Wi-Fi Capabilities	510, 510-LTE, 610, 610C, 610-LTE, 620, 620C, 640, 640C, 680, 680C	520, 520v, 540
Wi-Fi standards	802.11 a/b/g/n/ac	802.11 a/b/g/n/ac
Frequency bands (GHz)[1]	2.412~2.472, 5.150~5.825	2.400-2.4835, 5.150-5.250, 5.725-5.850
Antenna (max data rate)	2x2 MIMO	3x3 MIMO
Max simultaneous SSIDs	4	4
Max transmit power[1]	21 dBm for 2.4 GHz 20 dBm for 5 GHz	20 dBm for 2.4 GHz and 5 GHz

1. Country-dependent; frequency and power limits are set once unit is activated

Wireless WAN (3G / 4G / LTE) specifications

3G / 4G / LTE Capabilities	510-LTE-AE	510-LTE-AP	610-LTE-AM	610-LTE-RW
Modem	Sierra Wireless EM7455	Sierra Wireless EM7430	Sierra Wireless EM7511	Sierra Wireless EM7565
Geography	North America &Europe	ASIA, ANZ, LATAM	North America	Rest of world
LTE category	Cat-6	Cat-6	Cat-12	Cat-12
Carrier aggregation	Yes	Yes	Yes	Yes
3G fallback	HSPA+	HSPA+	HSPA+	HSPA+
SIM slots	2 (only 1 active)	2 (only 1 active)	Dual SIM single standby	Dual SIM singlestandby
LTE bands	1, 2, 3, 4, 5, 7, 8, 12, 13, 20, 25, 26, 29, 30, 41	1, 3, 5, 7, 8, 11, 18, 19, 21, 28, 38, 39, 40, 41	B1, B2, B3, B4, B5, B7, B8, B9, B12, B13, B14, B18, B19, B20, B26, B29, B30, B32, B41, B42, B43, B46, B48, B66	B1, B2, B3, B4, B5, B7,B8, B9, B12, B13, B18,B19, B20, B26, B28, B29, B30, B32, B41, B42, B43, B46, B48, B66
Antennas	Main and AUX (via SMA connectors)			

Virtual Edge specifications

Private cloud (hypervisors)

Device	Max. Throughput	Max. Number of Tunnels*	Flows/ sec	Max. Concurrent Flows	Max. Number of Routes	Max. Number of Segments*
ESXi Virtual Edge (2-core, VMXNET3)	1.5 Gbps (1,300-byte) 900 Mbps (IMIX)	50	2400	240K	35K	128
KVM Virtual Edge (2-core, Linux Bridge)	800 Mbps (1,300-byte) 250 Mbps (IMIX)	50	2400	240K	35K	128
KVM Virtual Edge (2-core, SR-IOV)	1.5 Gbps (1,300-byte) 900 Mbps (IMIX)	50	2400	240K	35K	128
ESXi Virtual Edge (4-core, VMXNET3)	4 Gbps (1,300-byte) 1.5 Gbps (IMIX)	400	4800	480K	35K	128
ESXi Virtual Edge (4-core, SR-IOV)	5 Gbps (1,300-byte) 2 Gbps (IMIX)	400	4800	480K	35K	128
KVM Virtual Edge (4-core, Linux Bridge)	1 Gbps (1,300-byte) 350 Mbps (IMIX)	400	4800	480K	35K	128
KVM Virtual Edge (4-core, SR-IOV)	4 Gbps (1,300-byte) 1.5 Gbps (IMIX)	400	4800	480K	35K	128
ESXi Virtual Edge (8-core, VMXNET3)	6 Gbps (1,300-byte) 2 Gbps (IMIX)	800	28800	1.9M	35K	128
ESXi Virtual Edge (8-core, SR-IOV)	6 Gbps (1300-byte) 3 Gbps (IMIX)	800	28800	1.9M	35K	128
KVM Virtual Edge (8-core, SR-IOV)	6.5 Gbps (1300-byte) 3.2 Gbps (IMIX)	800	28800	1.9M	35K	128

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Edge configuration

	2 vCPU	4 vCPU	8 vCPU	10 vCPU
Minimum memory (DRAM)	8 GB	16 GB	32 GB	32 GB
Minimum storage	8 GB	8 GB	16 GB	16 GB
Supported hypervisors	Software version 4.0 and above: ESXi 6.5U1, 6.7U1, 7.0 KVM Ubuntu 16.04 and 18.04			
Supported public clouds	AWS, Azure, GCP, Alibaba			
Support network I/O	SR-IOV, VirtIO, VMXNET3			

Required host settings	• CPUs at 2.0 GHz or higher
	• CPU configuration:
	  – AES-NI enabled
	  – Power savings disabled
	  – CPU turbo enabled
	  – Hyper-threading disabled
	  – Minimum instruction sets SSE3, SSE4, and RDTSC instructions
	  – Recommended instruction sets AVX2 or AVX512
	• VMware ESXi required settings:
	  – CPU reservation – Maximum
	  – CPU shares – High
	  – Memory reservation – Maximum
	  – Latency sensitivity – High			

Note: Performance was obtained using an Intel® Xeon® CPU E5-2683 v4 @ 2.10 GHz (AES-NI)

Public cloud

Amazon Web Services (AWS)

AWS Instance types	c5.large	c5.xlarge	c5.2xlarge	C5.4xlarge
Maximum throughput	100 Mbps (1300-byte) 50 Mbps (IMIX)	200 Mbps (1300-byte) 100 Mbps (IMIX)	1.5 Gbps (1300-byte) 450 Mbps (IMIX) 150 Mbps (64-byte)	3 Gbps (1300-byte) 1 Gbps (IMIX) 200 Mbps (64-byte)
Maximum tunnels	50	400	800	2,000
Flows per second	1,200	2,400	4,800	9,600
Max. concurrent flows	125,000	250,000	550,000	1.9M
Max number of routes	35,000	35,000	35,000	35,000
Maximum segments	128	128	128	128

Note: c5.2xlarge and c5.4xlarge performance and scale numbers are based on AWS Enhanced Networking (ENA SR-IOV drivers) 'enabled'

Microsoft Azure (Without Accelerated Networking)

Azure VM Series	D2d v4	D4d v4	D8d v4	D16d v4
Maximum throughput	100 Mbps (1,300-byte) 50 Mbps (IMIX)	200 Mbps (1,300-byte) 100 Mbps (IMIX)	1 Gbps (1,300-byte) 450 Mbps (IMIX)	1 Gbps (1,300-byte) 450 Mbps (IMIX)
Maximum tunnels	50	400	800	2,000
Flows per second	1,200	2,400	4,800	4,800
Max. concurrent flows	125,000	250,000	550,000	550,000
Max number of routes	35,000	35,000	35,000	35,000
Maximum segments	128	128	128	128

Microsoft Azure (Accelerated Networking)

Azure VM Series	Ds3_v2	Ds4_v2	Ds5_v2	D4d_v5	D8d_v5	D16d_v5
Maximum throughput	2.5 Gbps (1,300-byte) 1.5 Gbps (IMIX)	5.3 Gbps (1,300-byte) 2.7 Gbps (IMIX)	6.5 Gbps (1,300-byte) 3.1 Gbps (IMIX)	4.5Gbps (1,300-byte) 1.3 Gbps (IMIX)	6.3 Gbps (1300 byte) 2.7 Gbps (IMIX)	6.4 Gbps (1300 byte) 2.9 Gbps (IMIX)
Maximum tunnels	400	800	2000	400	800	2000
Flows per second	2400	4800	4,800	2400	4800	4800
Max. concurrent flows	250000	550,000	550,000	250,000	550,000	550,000
Max number of routes	35,000	35,000	35,000	35,000	35,000	35,000
Maximum segments	128	128	128	128	128	128

Note:

1. Azure Accelerated Networking is supported only from release 5.4.0
2. Accelerated Networking is supported only on Connect-X4 and Connect-X5 NICs

Google Cloud Platform

GCP Instance Type	n2-highcpu-4	n2-highcpu-8	N2-highcpu-16
Maximum throughput	1.5 Gbps (1,300-byte) 750 Mbps (IMIX) 100 Mbps (64-byte)	4.4 Gbps (1,300-byte) 1.5 Gbps (IMIX) 150 Mbps (64-byte)	6.5 Gbps (1,300-byte) 1.9 Gbps (IMIX) 250 Mbps (64-byte)
Maximum tunnels	50	400	800
Flows per second	1,200	2,400	4,800
Max. concurrent flows	125,000	250,000	550,000
Max number of routes	35,000	35,000	35,000
Maximum segments	128	128	128

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Edge platform and software release matrix

Edge / Software Version	4.5.x	5.0.x	5.1.x	5.2.x	5.4.x
510	●	●	●	●	●
510-LTE	●	●	●	●	●
520	●	●	●	●	●
520V	●	●	●	●	●
540	●	●	●	●	●
610	●	●	●	●	●
620	●	●	●	●	●
640	●	●	●	●	●
680	●	●	●	●	●
840	●	●	●	●	●
1000	●	●	●	●	●
2000	●	●	●	●	●
3400	●	●	●	●	●
3800	●	●	●	●	●
3810	●	●	●	●	●
510N, 610N, 620N, 640N, 680N	●	●	●	●	●

Regulatory and compliance certifications

EMC	FCC (US) CE (Europe) R-Mark (Japan) SRRC (China) KCC (Korea) NCC (Taiwan) ICES-003 EN 55022 CISPR 22 AS/NZS 3548VCCI CNS 13438 EN 300-386 EN 61000 (Immunity) EN 55024 CISPR 24 EN 50082-1 CISPR 35 (Edge 510/510-LTE/6x0/3x00 Only) EN 55035 (Edge 510/510-LTE/6x0/3x00 Only)
Safety	UL 60950-1 UL 62368-1 CAN/CSA C22.2 EN 60950-1 EN 62368-1 AS/NZS 60950-1AS/NZS-62368-1 IEC 60950-1 IEC 62368-1 GB-4943 (CCC)
RoHS	Compliant

Change log

Change	Date
Added Edge 610-LTE information	08/05/2021
Added IPv6 and CWS to features supported section Changed "Cloud VPN Hub" to "Gateways as Cloud VPN Hub"	09/16/2021
Corrected 1G to 9G for ESXi Virtual Edge (8-core, SR-IOV) Add initial release support to VNF capability section Add -C -N description on model names for physical Edge models	11/03/2021
Changed Mixed Edition to Yes for Standard Edition Updated the throughput and license tier for 510, 520, and 610 to reflect performance increase in Release 4.5 Added Release 4.5.0 hardware platform support	12/01/2021
Added max NAT entries Updated PSU information for the Edges	02/03/2022
Removed "Power Cable" column from the Hardware Accessories table. Updated USB ports (3G/4G LTE) and Edge cooling information.	03/08/2022
Removed 64-byte packet statistics	07/06/2022
Specified the max throughput (with routed-mode ports) is per Edge, not per port	07/06/2022
Changed the old SKU 510-LTE-NAEU to the new SKU 510-LTE-AE	09/14/2022
Added "multicast" to "routing support", per PM KR	09/15/2022
Updated the overall messaging on page 1 and 2 and added VMware SD-WAN client info	10/15/2022
Modified Figure 1 "VMware SD-WAN Components" by adding "SD-WAN Clients"	10/26/2022
Added the new section "SD-WAN Clients" to explained supported OS types and minimum versions	10/26/2022
Added to the "Configuration and monitoring" and "Port security" rows in the Software Features table	12/16/2022
Added 5.1.0 features (flow visibility, 802.1x on switched & routed ports, and MAB) to "Software Features"	12/12/2022
Added 5.2.0 Enhanced Firewall Service, hosted logging, and security monitoring dashboard in "Software Features"	05/24/2023
Renamed VMware Edge Cloud Orchestrator (was VMware SASE Orchestrator), VMware SD-Access (was VMware SD-WAN Client), and VMware Edge PoP (was VMware PoP or VMware SASE PoP) in text and graphics	08/22/2023
Removed VMware SD-Access (formerly known as SD-WAN Client) content as it is no longer relevant to SD-WAN.	08/22/2023
Re-added 5.2.0 Enhanced Firewall Service, hosted logging, and security monitoring dashboard into the "Software Features" table. Added EFS, hosted FW logging, and security monitoring dashboard (3 rows) to the "Software subscriptions editions" table.	08/28/2023
Added Edge performance numbers when IDS/IPS is enabled and when VMware Edge Intelligence is enabled	08/28/2023
Added/Revised GCP, AWS, Azure performance numbers based on the data provided by PM.	08/28/2023
Updated physical, virtual, and cloud Edge performance numbers, bandwidth tiers, based on software release 5.4.0	10/18/2023
Changed the product name of VMware Edge Network Intelligence to VMware Edge Intelligence	11/13/2023